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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,178	04/19/2004	Michael David McJimsey	420841	2451

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4845 PEARL EAST CIRCLE  
SUITE 300  
BOULDER, CO 80301

EXAMINER
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STERRETT, JEFFREY L

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/827,178

Applicant(s)

MCJIMSEY, MICHAEL DAVID

Examiner

Jeffrey L. Sterrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 19-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 13, 14, 18 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 4-12 and 15-17 is/are objected to.
- 8) ☒ Claim(s) 19-22 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/30/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-18 and 23-26, drawn to a current mode control system, classified in class 323, subclass 282.
  - II. Claims 19-22, drawn to a differential current threshold detector, classified in class 327, subclass 53.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination I has separate utility such as a current mode control system utilizing any generic differential current sensor and subcombination II has separate utility such as a differential current sensor utilized in any circuit that a current sensor is required. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and their recognized divergent subject matter and the search required for invention I is not required for invention II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Curtis Vock on March 17, 2006 a provisional election was made without traverse to prosecute the invention of a current mode control system, claims 1-18 and 23-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-22 are withdrawn from further

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consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must clearly and distinctly show every feature of the invention specified in the claims. It is noted that many of the following objections probably could be corrected by properly correlating the different drawings with each other (for example, there is nothing in figures 6 and 8 to indicate that voltage switch 520 is further illustrated by driver 642 and FET's 606 and 608 or that R-S flip flop 518 and R-S flip flop 640 represent one and the same R-S flip flop).

Therefore, the current controller comprising a positive power FET and a negative power FET as recited by claim 3 must be shown or the feature canceled from the claim.

Therefore, the differential current sensor comprising first and second positive reference FET's as recited by claim 4 must be shown or the feature canceled from the claim.

Therefore, the differential current sensor comprising first and second negative reference FET's as recited by claim 5 must be shown or the feature canceled from the claim.

Therefore, the positive power FET comprising X FET's substantially identical to the first positive and negative reference FET's as recited by claim 6 must be shown or the feature canceled from the claim.

Therefore, the X equaling 40,000 as recited by claim 7 must be shown or the feature canceled from the claim.

Therefore, the negative power FET comprising X FET's substantially identical to the second positive and negative reference FET's as recited by claim 8 must be shown or the feature canceled from the claim.

Therefore, the X equaling 40,000 as recited by claim 9 must be shown or the feature canceled from the claim.

Therefore, the differential current sensor comprising a first comparator as recited by claim 10 must be shown or the feature canceled from the claim.

Therefore, the differential current sensor comprising a second comparator as recited by claim 11 must be shown or the feature canceled from the claim.

Therefore, the system comprising a driver as recited by claim 12 must be shown or the feature canceled from the claim.

Therefore, the offset signal generated from a reference source within the system as recited by claim 14 must be shown or the feature canceled from the claim.

Therefore, the differential current sensor comprising first, second, and third transistors, first and second current sources, and a differential amplifier as recited by claim 15 must be shown or the feature canceled from the claim.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. No new matter should be entered.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
4. Claims 1-18 and 23-26 are objected to because in line 12 of independent claim 1 and line 8 of independent claim 23 "an average current" should be –the desired average current". Appropriate correction is required.
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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6. Claims 1, 18, 23, 24, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tateisi (US 5,912,552).

Tateishi discloses a current mode control system (80) comprising a load (LOAD), an output filter (L and Cout), an error amplifier (58) comparing the voltage across the load (Vout) to a reference voltage (Vref) to generating a reference current signal (Vcntl) indicative of a desired load current, a resistor (R1) connected between the load and the error amplifier, a differential current sensor (Rs and 56) generating a control signal (third control signal) indicative of when the output current greater than the desired current, and a current controller (62, AND1, FF1, AND2, 54, 72, Q1, and Q2) responsive to the control signal to alternatively couple the filter to a first supply rail (Vin) and a second supply rail (ground) to generate the desired load current.

7. Claims 1-3, 13, 14, and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Umemoto et al (US 6,815,939).

Umemoto et al discloses a current mode control system (figure 1) comprising a load (14), an output filter (Lo and Co), an error amplifier (16) comparing the voltage across the load (Vo) to a reference voltage (Vref) to generating a reference current signal (Vgm) indicative of a desired load current, a differential current sensor (15 and CP1) generating a control signal (R) indicative of when the output current greater than the desired current, and a current controller (FF, 18, 13, 11, and 12) responsive to the control signal to alternatively couple the filter to a first supply rail (Vin) and a second supply rail (ground) to generate the desired load current.

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8. Claims 4-12 and 15-17 would be allowable if rewritten to overcome the objection set forth above in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schwartz et al (US 5,808,455), Grimm (US 5,955,872), Littlefield (US 5,959,443), McDonald et al (US 6,600,298), Solivan (US 6,707,281), and Egan et al (US 6,836,100) are cited to show current mode control systems old and known in the art at the time of the invention.

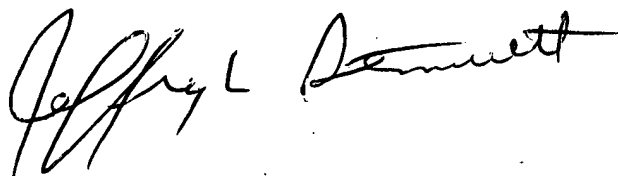
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey L. Sterrett whose telephone number is (571) 272-2085. The examiner can normally be reached on Monday-Thursday & 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey L. Sterrett  
Primary Examiner  
Art Unit 2838

A handwritten signature in black ink, appearing to read "Jeffrey L. Sterrett", written in a cursive style.